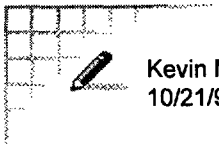

Kevin Mayer
10/21/98 12:54 PM

To: John Kemmerer/R9/USEPA/US
cc: Michael Gill/R9/USEPA/US, Kathi Moore, Peter Grevatt/DC/USEPA/US, Michael Osinski
Subject: Re: Highlights from 10/14 Regional Science Council meeting

John - It is a bit tricky to anticipate research needs several years from now. However, I think the five general areas of research that we identified last year are likely to be a reasonable template for future needs:

Toxicology - I expect that the Toxicological Assessment underway now (based on research funded by Air Force and Industry) will leave a number of questions unanswered. The remaining toxicological areas may be identified during the internal and external peer reviews to be completed this winter. (by Feb. 1999) At a minimum, there should be consideration of careful epidemiological research to examine potential (possibly subtle) effects on the large populations exposed in CA, NV and AZ. It is also possible that information from international sources could be instructive.

Analytical - There has been halting progress on analytical methodology for low concentrations of perchlorate. One important objective is to publish an EPA-approved method (or other type of standardization of methodology). I understand that this requires a concerted effort to quantitatively define the reproducibility and reliability of a method, and limitations. Included in this area is a formal determination of sample handling and storage protocols. Effects of common constituents of groundwater (at contaminated sites, too) must be understood. We are having difficulty with samples of high, although not extraordinarily high, salinity. We also have no satisfactory confirmatory method, and are relying on calibrated retention time on a ion chromatography column.

Treatment technology - AWWARF is starting some applicable research, and the engineering efforts of PRPs are providing some good empirical information. It would be worthwhile for EPA to take a leadership role in developing the scientific basis for perchlorate treatment, and perhaps extending this information into engineering design applications. EPA may decide to focus on certain technology types (e.g., biological, biochemical, ion exchange, membrane filtration, electrochemical, in situ).

Occurrence - Development of nation drinking water quality standards depends on confirming the extent of the problem nationwide. Region 9 is currently the clearing house for this information, and it is apparent that limited authority for collecting information outside the region is a drawback. In the past, ORD has designed and implemented nationwide occurrence studies for other chemicals (e.g. VOCs) and it appears that a perchlorate study is warranted. The perchlorate content of Chilean nitrate fertilizer could be a source of contamination in some places and this issue needs attention, both in predicting whether this is indeed a significant and problematic source and in tracing the application of perchlorate to lands in the US.

Ecological Effects - Many questions have been raised about the effects on aquatic plant and animal species, and on uptake and translocation in crops irrigated with perchlorate-contaminated water. There has only been an initial effort at addressing these issues, and it appears that more detailed, careful research is warranted.